

Maryland
Transportation
Authority

Martin O'Malley
Governor

Anthony Brown
Lt. Governor

Beverly K. Swaim-Staley
Acting Chairman

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Mary Beyer Halsey
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July 15, 2009

TO ALL PURCHASERS OF CONTRACT DOCUMENTS:

RE: Contract No. HT 705-000-002
Baltimore Harbor Tunnel Thruway Lane Control and Dynamic
Message Sign System Upgrade
Baltimore City

ADDENDUM NO. 2

To Whom It May Concern:

It is important that you acknowledge receipt of this Addendum No. 2 on the
referenced contract regardless if you will be bidding or not bidding.

Very truly yours,

Linda McGill, CPPB
Chief Procurement Officer

Enclosures

Contract No. **HT 705-000-002**

This will acknowledge receipt of the attached Addendum No.2.

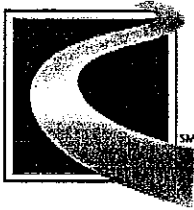
NAME OF COMPANY

SIGNATURE

DATE

THIS SIGNED ADDENDUM ACKNOWLEDGEMENT PAGE SHALL BE
RETURNED TO THIS OFFICE VIA **FAX AT 410-537-7801**, ATTENTION:
MAGGIE JOHNSON PRIOR TO THE BID OPENING DATE.

IN ADDITION, THIS SIGNED ADDENDUM ACKNOWLEDGEMENT
PAGE MUST BE ATTACHED TO THE OUTSIDE COVER OF THE BID
BOOK. FAILURE TO DO SO MAY RESULT IN REJECTION OF YOUR
BID.



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TO ALL PURCHASER'S OF CONTRACT DOCUMENTS

ADDENDUM NO. 2

RE: Contract No. HT 705-000-002
Baltimore Harbor Tunnel Thruway Lane Control and Dynamic
Message Sign System Upgrade
Baltimore City

To Whom It May Concern:

- A. The Bid Due Date for the above referenced contract is still scheduled for **July 29, 2009** at 12:00 Noon.
- B. The following changes have been made to the Contract Plan Sheets:
1. Delete sheets numbers 1, 2, 3, 6, 8, 10, 12, 15, 17, 20, and 21 and replace with sheets numbered the same dated July 10, 2009 Addendum # 2.
- C. The following changes have been made to the Invitation for Bids book:
1. Delete section 2-3 Lane Control Signals and replace with section numbered the same dated July 10, 2009 Addendum # 2.

Very truly yours,

Linda McGill, CPPB
Chief Procurement Officer

LM/mdj

THIS ADDENDUM SIGNED ACKNOWLEDGEMENT PAGE MUST BE ATTACHED TO THE OUTSIDE COVER OF THE BID BOOK. FAILURE TO DO SO MAY RESULT IN REJECTION OF YOUR BID.



SPECIAL PROVISIONS

CONTRACT NO. HT 705-000-002
Baltimore Harbor Tunnel Lane Control and
Dynamic Message Sign System Upgrade
Section 2-3 Lane Control Signals
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June 25, 2009

SP 2-3 LANE CONTROL SIGNALS

This work shall consist of removing and disposing of existing Electronic Speed Limit Signs (any type), Lane Control Signals ("LCS") (any type), and the furnishing and installation, integration, and testing of new LCS and wiring at locations shown on the plans. The complete LCS system shall consist of signal housing, display modules, driving electronics, photocell sensor control, associated cables and wiring and mounting assembly. The LCS shall be controlled from the existing Programmable Logic Controller ("PLC") or in new or converted locations by a Programmable Logic Controller ("PLC") provided by Transdyn as specified in other sections. The Contractor will be required to coordinate and schedule with the Authority delivery of the equipment to the site. If advised by the Authority that the DYNAC system is controlling Traffic Control Devices, the Contractor shall coordinate with the MA328-000-006 Contractor for integration of the new LCS with the DYNAC system for communications, control and status signals.

All LCS equipment components, modular assemblies, and other materials located in the LCS housing shall be removable, transportable, and capable of being installed by a single technician. All components furnished under this functional specification shall be current production equipment, new, and of recent manufacture. To ensure overall system compatibility, all LCS shall be from the same manufacturer.

SP 2-3.1 GENERAL REQUIREMENTS

The LCS face shall be a rectangular or square shape as described below. Four types of LCS shall be specified as follows:

- **Type 1** - Within the face, the signal shall contain one Light Emitting Diode ("LED") display of a red "X" symbol. The display shall create the appropriate symbol by a double stroked row of single LEDs. The character size shall be nominal 18" x 18". The dimensions of LCS and housing shall be 39" x 27".
- **Type 2** - Within the face, the signal shall contain three Light Emitting Diode ("LED") displays. Each display shall be designated to display a red "X" symbol, a yellow "X" symbol or a green "arrow" symbol. Each display shall create the appropriate symbol by a double stroked row of single LEDs. Each character size shall be nominal 18". It shall be permissible for all three messages to be overlapping as shown in the plans. The dimensions of LCS and housing shall be 39" x 27".



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- **Type 4** - Within the face, the signal shall contain one Light Emitting Diode ("LED") display of a red "X" symbol. The display shall create the appropriate symbol by a single stroked row of clustered LED pixels. The character size shall be nominal 24" x 24". The dimensions of LCS and housing shall be 48" x 32"
- **Type 5** - Within the face, the signal shall contain three Light Emitting Diode ("LED") displays. Each display shall be designated to display a red "X" symbol, a yellow "X" symbol or a green "arrow" symbol. Each display shall create the appropriate symbol by a single stroked row of clustered LED pixels. The character size shall be nominal 24". It shall be permissible for all three messages to be overlapping as shown on the plans. The dimensions of LCS and housing shall be 48" x 32".

For each type of LCS, the symbols shall be clearly visible in normal daylight and nighttime conditions, i.e., at full intensity; the LCS shall be clearly visible and legible for a distance up to 1000 ft under normal atmospheric conditions and under any lighting conditions.

The LCS shall be capable of operating over an ambient temperature range of -20°F to +110°F. The LED display modules shall be completely sealed against dust and moisture intrusion as per the requirements of NEMA Standard 250 -1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

The signal enclosure shall not contain the 120-volt power supplies for each indication; instead these power supplies shall be installed in the field cabinet and field wiring shall be provided. The field cabinet shall include a terminal block for termination of the 120 volt supply for the red "X" symbol, the 120 volt supply for the yellow "X" symbol, the 120 volt supply for the "arrow" symbol, and the 120 volt supply for the NEUTRAL. Each termination point will be labeled to correspond to the appropriate function. The contractor shall coordinate with the LCS sign manufacturer to determine most appropriate wiring configuration between the field cabinet and the LCS sign. The Contractor can use a junction box to connect or the wiring can be terminated inside the LCS enclosure on a terminal block. The Contractor shall use existing conduits for all the wiring between the field cabinet and the LCS sign. All field wiring and conduit sizes shall be verified with the LCS manufacturer. Upon field inspection, if the contractor determines that the existing conduit is damaged or inadequate, the contractor shall notify the Authority in writing. No conduit removal or modification shall be performed without written approval from the Authority.

Each LCS head shall be independently controlled to indicate the status of each lane. Each LCS enclosure shall contain screw down terminal blocks to allow for the easy replacement of signal faces in the field. A method to indicate loss of a character ("X" or "arrow") shall also be provided that will be external to the signal enclosure. LCS units install outside of



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the tunnel bores shall use surge suppression on the AC mains as described below. The surge suppression shall be utilized in the field cabinet which provides the AC to the LCS enclosure and within the LCS enclosure that is mounted on the structural supports above the roadway.

The sign construction shall be a modular concept consisting of the following "hand removable" self-contained modules: message display, rack mounted individual message drivers, driver rack assembly and sign enclosure. The sign assembly shall be designed with a lift off front face with no tool disconnect of wiring between front face and the sign body. The assembly of the LCS shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from wind ratings meeting AASHTO's requirements of 90mph with a 30% gust factor. No self-tapping fasteners may be used on the exterior of the sign. All mechanical fasteners shall be stainless steel.

SP 2-3.2 LANE CONTROL SIGNALS INSTALLATION

The existing LCS and other signs shall be removed as shown on the drawings by the Contractor and replaced by the new LED LCS on the existing or newly designed alternative mounting support structures (overhead structure, mast arm, structure wall) as described herein.

Type 1 and Type 2 LED LCS shall be installed on the existing mounting brackets, as shown on the Plans. Contractor shall inspect existing mountings for any damage or deterioration and ability to provide correct aiming of the sign prior to removing existing LCS. The contractor shall coordinate the field inspection effort to ensure that existing mountings are sufficient for the proposed installations. Contractor shall notify Authority in writing of deficiencies and proposed repairs or new installations needed and associated costs. Contractor shall not initiate repairs or replacement without written authorization from the Authority. Shop drawings of all mounting arrangements shall be verified with the sign manufacturer and provided for Authority's review and approval.

The Contractor shall design and implement an alternative newly designed mounting arrangement for Type 4 and Type 5 LED LCS. Details of the existing mountings are provided in the plans for the Contractor's information. As indicated in the details, the mountings must allow for both horizontal and vertical adjustment. Shop drawings detailing the alternative mounting arrangement shall be submitted by the Contractor to the Authority for approval prior to removal of the existing LCS. Alternative mounting hardware design must be in accordance with the SHA Standard Specifications. Costs associated with the design and fabrication of new mounting, removal of existing mounting, installation of new mounting and all incidentals shall be incidental to the LCS Type 4 and Type 5 Supply and Installation pay item.



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The existing LCS shall be disposed of by the Contractor.

The existing LCS shall remain functional until the replacement LCS is installed. The replacement LCS shall be operational by the end of the work shift. Outages outside of a work-shift and extended downtime of LCS is prohibited.

SP 2-3.3 LED DISPLAY REQUIREMENTS

Each pixel shall meet the following physical and performance characteristics:

- 1) The message display shall consist of LED's mounted on a PCB matrix with a matte black solder mask. Enclosure dimensions shall match existing enclosures so as to mount in the existing mounting frames ;
- 2) The PCB matrix shall have a minimum thickness of .093 inches;
- 3) The PCB shall have a component identifier silk screen and shall be conformal coated;
- 4) The PCB Matrices shall have the capability to display messages as described in sign types under general requirements above;
- 5) Only the LED's for the required messages shall be installed on the display matrix
- 6) For Type 1 and 2 signs, the message display shall be created using a double stroked row of single LEDs as shown on the plans;
- 7) For Type 4 and 5 signs, the message display shall be created using a single row of clustered pixels as shown on the plans;
- 8) For type 4 and 5, LED clusters shall be created using 4 LEDs;
- 9) The LED's shall be arranged in a manner to form an outline of the symbols and shall be distributed evenly. The maximum distance between consecutive LED's shall be 0.5 inches and shall not vary more than 10%;
- 10) Each LED or pixel shall be rated for 100,000 hours continuous operation with no more than 50 percent lumen depreciation
- 11) The red and amber LED shall be of the latest LED Alln GaP technology, the green LED's shall be of the latest In GaN Technology.
- 12) The minimum nominal luminous intensity of the LED's shall be 6,000 mcd at 20mA
- 13) LED clusters shall be interconnected via 2 pin connectors or soldering pads;
- 14) The individual LED light sources shall be interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than 1 cluster;
- 15) The display shall fit into front door which consist of an aluminum frame and face lens;
- 16) There shall be no electronic components visible on the front of the display. The display face shall consist solely of LED's mounted on a mat black PCB



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- 17) The lens and housing shall be sealed to create a watertight enclosure per NEMA 4X and IP66 standards.
- 18) The contractor shall furnish proof that their own independent water submersion testing and temperature cycle testing of LEDs is completed prior to procuring LEDs for the display.
- 19) The face lens shall be made of .250 in. (1/4") clear polycarbonate;
- 20) The entire display face shall be assembled as a one piece self-contained module that can be easily removed from the housing;
- 21) The door face shall be mounted on the sign housing on three (3) stainless steel "lift-off" type hinges and shall be latched using three (3) stainless steel 1/4 turn link locks
- 22) A retaining rod shall be provided to hold the front door in the "open position
- 23) The light output from the pixel shall meet ITE requirements for chromaticity. The measured chromaticity coordinates for the red messages shall conform to the chromaticity requirements of section 8.04 and figure 1 of the VTCSH Standard
- 24) The chromaticity measurements shall remain unchanged over the input line voltage range of 90 VAC to 135 VAC;
- 25) The LEDs used in the LCS shall be dimmable for improved nighttime visibility using a photocell with an adjustable potentiometer for setting the desired intensity during nighttime operation.
- 26) In case where multiple signs are mounted on the same gantry as shown on the plans, the sign assembly shall have a common dimming mechanism for all the signs on the gantry so that all the signs are at the same dimming level for each gantry.
- 27) Each LED message shall be powered by using 120V AC current provided at the field cabinet. No LED shall be illuminated at any intensity unless commanded ON by the controller. If any solid-state relays are utilized for the LEDs, when in the OFF state, no leakage current shall be allowed to the LEDs.
- 28) LED failure rate of greater than 5 percent per sign in the first six months of operation will require a total sign replacement. Failures include any burned out LEDs as well as LEDs that light when they are not supposed to be lit.

SP 2-3.4

LANE CONTROL SIGNAL ENCLOSURE

Each Lane Control Signal enclosure shall meet the following physical characteristics:

- 1) The enclosure shall be fabricated from 0.125" aluminum and shall be 8" deep. Enclosure dimensions shall match existing enclosures so as to mount in the existing mounting frames;



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- 2) The enclosure shall have all corners and seams welded to provide a weatherproof seal around the entire case.
- 3) A face shield lens shall be fixed inside an aluminum door frame, which is mounted on the housing body by three (3) "lift-off" type stainless steel hinges. The front door frame assembly shall cover a gutter surrounding the full perimeter of the housing body and fit flush to the exterior of the body.
- 4) All fasteners shall be stainless steel corrosion free. All fasteners shall be nyloc type using nylon collar inserts to provide tight locking ability.
- 5) The signal face visor shall be aluminum, 5032-H32 series, welded securely to the signal enclosure. The visor shall not impede the removal of the signal face. The enclosure shall include a terminal block for termination of the wiring from the 120 volt supplies located in the field cabinet, there shall be a terminal block for the red "X", a terminal block for the yellow "X", a terminal block for the green "arrow", and finally a terminal block for the AC NEUTRAL. Each termination point shall be labeled to correspond to the appropriate function
- 6) The LCS sign housing shall be watertight sealed and have no holes on the enclosure. The enclosure, signal face visor and signal face shall be acid etched, primed with zinc chromate primer and painted white, with the exception of the signal face and the inside of the signal face visor which shall be painted flat black, with two coats of exterior enamel.

SP 2 – 3.5 Driver Rack Assembly

- 1) The driver rack assembly shall be a single part self contained module consisting of an interconnect PCB and anodized aluminum frame, located in the field cabinet;
- 2) The driver rack shall have the capabilities to house up to 6 drive modules.
- 3) The driver rack assembly shall be secured in the sign enclosure by four (4) captive type spring-loaded thumbscrews. The entire assembly shall be removable in less than one minute without the need of any tools
- 4) The interconnect PCB shall include connectors for 6 drive modules and 6 display messages;
- 5) The interconnect PCB shall include terminals for all field wiring: 120VAC controls, external photocell, and alarm signals;
- 6) All interconnections within the LCS shall be accomplished through the driver rack assembly, no internal wiring shall be permitted with the exception of a single cable for the message display;
- 7) The driver rack assembly is UL certified

SP 2 – 3.6 Lane Control Signal Electrical

- 1) All conductor wire runs shall be continuous with no splices.



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- 2) All wiring harnesses shall be encased in a continuous sheath. The use of cable ties to arrange wiring harnesses is not acceptable. The use of adhesive backed wire holders is also not acceptable.
- 3) Cabinet internal mounting panels shall have a grounding conductor to the cabinets main ground bar/lug.
- 4) All conductors shall be labeled. Labels shall be either attached to each end of the conductor and indicate the destination of the other end of the conductor, or shall be a continuous, permanent identification of the conductor's function and located every six inches along the conductor.
- 5) All conductors used in the controller cabinet wiring shall conform to the following color code requirements.
 - a. AC Neutral conductors shall be identified by a continuous white color.
 - b. AC Ground conductors shall be identified by a continuous green color.
 - c. AC Positive conductors shall be identified by a continuous black or red color depending on phase.
 - d. All other conductors shall be identified by any color not previously specified as defined in NFPA 70 National Electrical Code.
 - e. All conductors for 120 volts, 60 hertz, AC branch circuits shall use a minimum 12 AWG conductor, type THHN/THWN, 600V insulation. AC branch circuits for 120VAC, 20 ampere service, which are longer than 75 feet shall use a minimum 10 AWG conductor, type THHN/THWN insulation. Conductor sizes are based on copper and any other material used for the conductor shall be pre-approved for use by the Authority Project Engineer.
 - f. All wire insulation class not already specified shall be THHW minimum.
- 6) All bolts used for electrical connections shall be fabricated from stainless steel.
- 7) All hardware used for electrical connections and terminal facilities shall be fabricated using cadmium-plated brass.
- 8) All LCS units mounted outside of the tunnel shall have surge suppression installed as follows:



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The surge suppression shall be connected in series upstream of the device to be protected so that the maximum operating current flows through a base element. However the surge suppression unit supplied, shall have the ability to be connected in parallel to the power source using the base elements without a decoupling inductor for operating currents that to the device to be protected which may require current greater than 20 A. The base element shall be labeled on the input and output side with individual strip labels.

The following specification shall apply to the surge suppressors used for the LCS:

Nominal voltage U_N : [V AC]	130VAC
Peak Surge Current	20KA
Peak Surge Voltage @ 10KA	650 Volts
Energy	270 Joules
Power Dissipation	1.5 Watts maximum
Peak Voltage @ 1ma	212 Volts
Typical Capacitance	4000pf
Operating Temperature	-40 ⁰ C to +85 ⁰ C
Follow Current	None

The surge suppression device shall be the HE100 from HESCO/RLS or equal.

SP 2-3.7 CONDUIT

The Contractor shall use existing conduit for wiring between the field equipment cabinet to the lane control signal. All field wiring and conduit sizes shall be verified with the LCS manufacturer. Upon field inspection, if the contractor determines that the existing conduit is damaged or inadequate, the contractor shall notify the Authority in writing. No conduit removal or modification shall be performed without written approval from the Authority.

When new wire conductors or cables are installed in conduit, for lengths of more than 20 feet, cable lubricant shall be used when pulling the wire/cable through the conduit. Once removed to loosen conduit, existing conduit fittings shall not be re-used. Conduit, either existing or new, shall have pull ropes installed. Conduit grounding collars of conduits that enter the base of a ground-mounted traffic cabinet should also be connected into the earth grounding system.

All conduit, conduit fittings and mounting hardware shall be in conformance with Maryland SHA Standard Specifications for Construction and Materials, January 2001, Section 805 and Section 921.7 "Electrical Conduit and Fittings."



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SP 2 – 3.8 Pull Boxes and Junction Boxes

Furnish junction boxes made by an approved cast iron manufacturer and having a hot dipped zinc coating. The covers shall be heavy duty, with a hot dip zinc coating, and equipped with watertight neoprene gasket and recessed, hex head, stainless steel cover bolts. Junction boxes shall be UL listed for application.

Furnish grounding lugs, mechanical connectors that are UL listed and approved for copper wire. Use stainless steel for both inside and outside mechanical connections to the junction box. Provide engineer-approved protection that totally and permanently seals connections with neoprene gasketing, using silicone or rubberized caulking compound if necessary.

Coordinate with the engineer factory knockouts for conduit entrance to the pull box. Knockouts shall not negate boxes UL listing.

Minimum 14 gauge thickness shall be provided for all boxes. All edges and corners shall be rounded and without burrs.

Minimum NEMA rating of 3X shall be provided for all boxes.

SP 2 – 3.9 LCS Test Requirements

The Contractor shall obtain the service of the manufacturer/vendor for technical installation assistance, field testing, and commissioning, as required. Testing of all equipment furnished and installed under this Contract shall be conducted by, and the responsibility of the Contractor. The Authority reserves the right to perform any inspections and test deemed necessary to assure that the equipment conforms to the requirements specified in this document.

The Contractor shall make arrangements for the witnessing of tests as required or requested by the Authority. Full documentation of test results including problems experienced shall be prepared by the Contractor and submitted to the Authority. Any equipment failing the tests shall be replaced or repaired and re-tested at the Contractor's expense.

The Contractor shall make arrangements for Factory Acceptance Testing as directed by the Authority. The FAT shall be held at the manufacturer's facility with the Contractor and Authority personnel or representatives. Factory Acceptance Test procedures shall be submitted to the Authority for approval at least 8 weeks prior to the scheduled test. The LCS unit, and associated controller/AC Power supplies, wiring harnesses, and all necessary electronics/modules shall be set up with a Programmable Logic Controller for



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remote control and shall be demonstrated at the FAT. One Factory test shall be provided for each type of LCS to be provided by the Contractor under the contract. The LCS sign manufacturer shall incur all expenses including travel, accommodation, etc. for two Authority representatives to participate in the FAT at no cost to the Authority. If the FAT is unsuccessful, the manufacturer will be responsible for conducting the test again and all expenses for Authority personnel to attend the test again.

Failure to conform to the requirements of any test and these specifications shall be counted as a complete failure, and the equipment shall be rejected. Rejected equipment/tests may be retested after all deviations have been corrected, and the Authority has been notified in writing of all problem resolutions and requested retest dates. Only after successful completion of all factory demonstration/acceptance tests shall the LCS for this contract be accepted for shipment to the implementation site.

Upon successful completion of the Factory Acceptance Test for all LCS types, the Contractor will submit a Factory Acceptance Test report for each type of LCS, which will not any anomalies and remedial action for anomaly resolution.

No equipment for which a Factory Demonstration/Acceptance Test is required shall be shipped by the Contractor (manufacturer/vendor) without successful completion of the testing, receipt of documented test results and written authorization of the Authority to ship.

The Contractor shall field test each LCS unit prior to installation. The LCS units shall be tested locally after receipt of the material from the manufacturer at mutually agreeable dates and locations. Each LCS shall be wired to a test fixture that shall provide the necessary control signals and AC voltages for each of the LED Matrices and all electronic modules. The test fixture shall provide the necessary power and AC voltages to turn on all modules or LED Matrices simultaneously.

The field site test shall demonstrate the following at a minimum:

- The ability of a technician to access all modules within the LCS housing.
- The size and type of each LCS and the appropriate LED characters are as stated in the special provisions (SP 2-3.1).
- When powered up, the ability to switch between the red "X", yellow "X", and the green "Arrow" when commanded by the MdTA test representative.
- The ability of the photocell circuitry to command any of the LED characters to be dimmed.
- The ability to "Blank" the display or remove power to any/all characters simultaneously by remote control.



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- Communications and control between the LCS and the LCS Controller or remote control facility.
- Any other tests deemed necessary by the Authority or a representative of the Authority.

The Contractor shall provide a written test report upon completion of each test, detailing all test results and a proposed course of action for resolving any anomalies.

In the event of a requirement deficiency requiring repair or replacement of a component, the Authority will require a full test to be repeated.

The Contractor shall not commence Installation or Integration without satisfactorily passing the field tests and without written approval to commence field testing from the Authority.

SP 2-3.10 MEASUREMENT AND PAYMENT

Removal of Lane Control Signals will be measured per each signal. Work will include removal of controllers where the controllers are not reused, all incidentals and delivery to disposal site.

Removal of Electronic Speed Limit Signs (any type) will be measured per each. Work will include removal of controllers, all incidentals and delivery to site or disposal as determined by the Authority.

Purchase and Installation of Lane Control Signal Type 1 or Type 2 (3 message) will be measured per each. Work will include all labor, materials, including all incidental connections and testing in order to assure operation, as approved by the Authority, and development of shop drawings as required.

The payment shall be full compensation for all materials, labor, equipment and all other incidentals necessary to complete this work.

Purchase and Installation of Lane Control Signal Type 4 or Type 5 (3 message) will be measured per each. Work will include all labor; materials; removal of existing mountings; design, fabrication and installation of new mountings; including all incidental connections and testing in order to assure operation, as approved by the Authority, and development of shop drawings as required. The payment shall be full compensation for all materials, labor, equipment and all other incidentals necessary to complete this work.



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Installation of new conduit will be measured per linear foot. Work will include removal of the existing conduit and installation of new conduit as indicated on the plan sheets. Payment includes labor for removal and installation and material. See Section *SP 2-5 Field Equipment Cabinets* for line item.

Payment for installation and purchase of pull boxes and junction boxes required for this contract will be considered incidental to the LCS purchase costs.

The Authority will make payment for the following items only upon completion of the installation and commissioning of the LCS and acceptance by the Authority.

Item 8003	Removal of Existing LCS (3 Message)	Each
Item 8004	Remove Existing Electronic Speed Limit Signs	Each
Item 8005	Supply and Installation of New Type 1 LCS (18" Characters)	Each
Item 8006	Supply and Installation of New Type 2 LCS (18" Characters) (3 message)	Each
Item 8007	Supply and Installation of New Type 4 LCS (24" Characters)	Each
Item 8008	Supply and Installation of New Type 5 LCS (24" Characters) (3 message)	Each